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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,705	12/13/2004	Hirofumi Masuda	1600-0157PUS1	9097

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EXAMINER

BERNSHTEYN, MICHAEL

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/517,705	Applicant(s) MASUDA ET AL.	
	Examiner Michael Bernshteyn	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 10-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-22 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 03/11/05, 12/13/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-9, drawn to an acrylic resin.

Group II, claim(s) 10-16, drawn to a crosslinkable acrylic rubber composition.

Group III, claim(s) 17-22, drawn to a shaped article, obtainable by shaping and crosslinking the acrylic rubber composition.

2. The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I claims is the claimed an acrylic rubber of a copolymer and this feature is not present in Groups II and III. The special technical feature of the Group II claims is the claimed crosslinkable acrylic rubber composition and this feature is not present in Groups I and III. The special technical feature of the Group III claims is the claimed the shaped article, obtainable by shaping and crosslinking the acrylic rubber composition and this feature is not present in Groups I and II. Therefore unity of invention is lacking.

3. During a telephone conversation with Mr. Marc S. Weiner (Registration No. 32,181) on September 12, 2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-9. Affirmation of this election must be made by applicant in replying to this office action. Claims 10-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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4. Applicant is reminded that upon the cancellation of claims to non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).
5. Claims 1-9 are active in the Application.

Claim Objections

6. Claim 1 is objected to because of the following informalities: improper Markush group format. According MPEP § 2171.05(h), one acceptable form of alternative expression, which is commonly referred to as a Markush group, recites members as being "selected **from the group consisting of A, B and C.**" See *Ex parte Markush*, 1925 C.D. 126 (Comm'r Pat. 1925). Appropriate correction is required.
7. Claims 1 and 3 are objected to because of the following informalities: 'one kind of monomer' expression is not in compliance with US practice. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriyama et al. (U.S. Patent Application Publication 2001/0005742) in view of Piloni et al. (U.S. Patent 3,196,133).

With regard to the limitation of instant claims 1-5 and 8, Moriyama discloses a butenedioic acid monoalkyl-copolymerized acrylic elastomer containing 0.1-30% by mole of **butenedioic acid monoalkyl ester** on the basis of carboxyl groups copolymerized in the acrylic elastomer or its cross-linkable composition (abstract). Butenedioic acid monoalkyl-copolymerized acrylic elastomer includes, for example,

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copolymers of at least one of alkyl acrylate and alkoxyalkyl acrylate with **monoalkyl ester of butanedioic acid** such as maleic acid, fumaric acid, etc. Alkyl acrylate includes, for example alkyl acrylates with alkyl groups having 1-8 carbon atoms, such as methyl acrylate, ethyl acrylate, etc. [0010]. Alkoxyalkyl acrylate includes, for example alkoxyalkyl acrylates with alkoxyalkyl groups of 2-8 carbon atoms, such as methoxymethyl acrylate, 2-methoxyethyl acrylate, etc. [0011].

Moriyama discloses that butenedioic acid monoalkyl ester-copolymerized acrylic elastomer can be further copolymerized, within such a range as not to deteriorate the characteristics (e.g. **not more than about 30% by weight**) with other vinyl or olefinic monomers, such as styrene, **cyclohexyl acrylate**, etc. [0012].

Moriyama discloses that content of butenedioic acid monoalkyl ester in the acrylic elastomer must be 0.1-30% by mole, preferably 0.5-20% by mole, more preferably 1-15% by mole, on the basis of the copolymerized carboxyl groups in the acrylic elastomer [0018].

He discloses that alkyl acrylates are preferable from the viewpoint of balance between oil resistance and low temperature resistance. Generally, the longer the chain of alkyl group, the more effective the low temperature resistance, the less effective the oil resistance, and vice versa [0010]. The alkoxyalkyl acrylates have an ether group as a side chain and thus are distinguished in balance between low temperature resistance and oil resistance [0011].

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Moriyama does not disclose an alicyclic structure of butenedioic acid monoalkyl ester and that the acrylic rubber wherein the units (A) of a butenedioic acid monoalkyl monomer are units of butenedioic acid monocycloalkyl ester monomer.

Piloni discloses vinyl chloride resins, which are copolymers of vinyl chloride with other monomers within certain compositional limits (col.1 line 65 through col. 2, line 2): (A) vinyl chloride; (B) a dihydrocarbonyl ester of monoethylenically unsaturated dicarboxylic acid in which the esterifying hydrocarbonyl groups each contain 1-10 carbon atoms, or mixture of esters of this type (dihydrocarbonyl ester); (C) an alkyl ester of acrylic or methacrylic acid in which the alkyl group contains 6-12 carbon atoms, or a mixture of such esters (alkyl acrylate or methacrylate); (D) a monohydrogen, monohydrocarbonyl ester of a monoethylenically unsaturated polymerizable dicarboxylic acid in which the esterifying hydrocarbonyl groups contain 1-10 carbon atoms, or a mixture of esters of this type (monohydrocarbonyl ester) (col. 3, lines 15-30).

He discloses that examples of the alkyl ester of acrylic or methacrylic acid (C) are **alkyl and cycloalkyl esters** of these acids, 2-ethyl hexyl acrylate, 2-ethyl hexyl methacrylate, **2-cyclohexyl acrylate**, etc. (col. 4, lines 69-73). The monohydrogen-monohydrocarbonyl esters (D) may be **homologs** of any of the esters of group B in which one of the esterifying hydrocarbonyl esters has been replaced by a hydrogen atom, i.e., they are **monohydrogen, monohydrocarbonyl esters** of the same acids. Exemplary specific esters includes methyl hydrogen maleate, **cyclohexyl hydrogen maleate**, etc. (col. 5, lines 8-12 and 20-25).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of alicyclic structure of butenedioic acid monoester monomer of Piloni into Moriyama's acrylic rubber because acid esters of such adduct acids have the advantageous property, when copolymerized in the resins, of not forming gels with alkaline pigments or epoxidized materials which may be present in solutions along with the resins (US'133, col. 5, lines 35-40).

With regard to the limitation of instant claim 6, Moriyama discloses that an amount of carboxyl groups in the copolymer can be determined by subjecting thoroughly water-washed, reprecipitated, water-washed and dried copolymer to neutralization titration to obtain an acid value, followed by calculation [0020]. Acid value of washed copolymer 4.5-5.1 mg/g (table 1, [0047]).

With regard to the limitation of instant claim 7, Moriyama does not disclose the acrylic rubber wherein the monomer units (B) can be mixture from acrylic acid alkyl ester monomers, methacrylic acid alkyl ester monomers, acrylic acid alkoxyalkyl ester monomers and methacrylic acid alkoxyalkyl ester monomers.

Piloni discloses that the component C of the polymer may be **any alkyl ester of acrylic or methacrylic acid** in which the alkyl groups contain 6-12 carbon atoms. Examples of such esters are...the **acrylates** and **methacrylates** of commercial mixed alcohols derived by the oxo process from petroleum fractions and the like. Again it will be understood that **mixtures of these esters** may be used instead of pure materials (col. 4, line 67 through col. 5, line 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of using the mixture of alkyl and alkoxyalkyl esters of acrylic or methacrylic acid of Piloni to obtain Moriyama's acrylic rubber because the combination of these esters will create a balance between low temperature resistance and oil resistance (US' 2001/0005742, [0011]).

With regard to the limitation of instant claim 9, Moriyama discloses that the resulting acrylic elastomer has a Mooney viscosity ML_{1+4} (100°C) of about 10 to about 100, preferably about **20 to about 80** [0017].

Thus, the combination of Moriyama and Piloni renders claims 1-9 *prima facie* obvious in view of absent of unexpected results commensurate in scope of claims.

Conclusion

Other references used but not cited in this office action include U.S. Patents 3,981,987, 3,196,133, 3,883,472, 6,045,902, 4,820,774, 3,904,588, 2,754,281, 6,329,450; US Patent Application Publication 2001/0005742, JP 03062867, JP 61-203255, JP 63-068613, JP 61-225,243, JP 2001-240623, JP 2001-131224 and JP 2001-181356 are shown on the Notice of References Cited Form (PTO-892).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8-5:30.

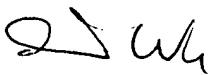
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Bernshteyn
Patent Examiner
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MB
09/29/2005


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